

DESCRIPTIONS OF NEW FOSSIL MOLLUSCA, PRINCIPALLY CRETACEOUS.

BY T. A. CONRAD.

PACHYCARDIUM, Conrad.

Elevated, thick, cardinal plate broad; ligament deep and oblique; anterior cardinal tooth in the left valve slightly oblique or nearly direct, prominent, compressed, triangular; anterior lateral teeth distant, very prominent, with a pit on the inner side; sculpture, radiating little prominent ribs on the posterior side.

P. SPILLMANI, Conrad.

This genus is as easily recognised as *Protocardia*, but, unlike the latter, it contains only two species, both of which existed in the Chalk period, one in Mississippi and the other in India. The Indian species, *C. bisectum*, Forbes, has more numerous ribs, which cover half the surface; but the American shell has fewer ribs, which do not extend so far as the middle of the valves. The former has much more elevated beaks than the latter.

This genus has not been found in any formation later than the Oligocene, and yet one recent shell, *P. Belcheri*, Adams, lives in the Soloo seas, in deep water.

CARDIUM, Linn.

C. RIPLEYANUM, Conrad.—Pl. 9, fig. 6.

*Description*.—Suborbicular, equilateral, ventricose; ribs 21, broad anteriorly, narrow posteriorly, interstices crossed by prominent minute lines.

*Locality*.—Haddonfield, N. J.

GEMMA? Deshayes.

G. CRETACEA, Conrad.—Pl. 9, fig. 19.

*Description*.—Triangular, subequilateral, convex, smooth and

polished; anterior and posterior margins nearly equally oblique; extremities acutely and nearly equally rounded; beaks not prominent or inclined.

*Locality.*—Tippah Co.? Miss.

#### NEMODON, Conrad.

*Description.* Equivalved, thin; hinge line long and straight, or slightly curved under the umbo; hinge in the left valve with three linear teeth parallel with the anterior cardinal margin; posterior lateral tooth double, very long, linear; under the apex a few granular teeth.

N. EUFALENSIS, Conrad.—Pl. 9, fig. 16.

*Description.* Trapezoidal, elongated, thin, contracted from umbo to base; summit obtuse; concentric lines minute and punctate; radiating lines very minute and indistinct; posterior margin oblique, slightly rounded.

*Area (Macrodon) Eufalensis*, Gabb.

*Locality.* Haddonfield, N. J.

This genus is related to the older *Macrodon*, Lycett, and to the Eocene *Arca heterodonta*, which Deshayes places in a group of 3 species, under the name *Cucullaries*. I think these 3 species are not representatives of one genus, but of three. *Macrodon* characterizes the Jurassic era, *Nemodon* the Cretaceous, and *Cucullaria*, as represented by *Arca heterodon*, Deshayes, the older Eocene.

*Arca heterodon*, Desh., is a species of this genus, which is exclusively Cretaceous.

#### NEMOARCA, Conrad.

N. CRETACEA, Conrad.—Pl. 9, fig. 21.

*Description.*—Trapezoidal, short, ventricose, subequilateral; ribs 30 as far as umbonal slope, linear, except 3 or 4 nearest to the umbonal slope, which are wider, and one of them grooved; ribs on the anterior submargin and post umbonal area close and minute; hinge line linear, teeth minute, oblique.

*Locality.* Haddonfield, N. J.

This small species more nearly resembles *Striarca*, Conrad, than any other Cretaceous bivalve; but it has the cardinal teeth oblique. There is no internal plate, and the radiating lines are more prominent than in *Trigonarca*. No species of this genus has been found in the Eocene or later Tertiaries.

## TRIGONARCA, Conrad.

T. CUNEIFORMIS, Conrad.—Pl. 9, fig. 1.

*Description.* Trapeziform, inequilateral, elongated, posterior side cuneate; anterior side distinctly radiated; posterior radii very minute, close, obsolete; umbonal slope angulated; post umbonal area depressed, extremity acute; posterior hinge margin oblique.

*Locality.* Haddonfield, N. J.

The smallest species yet known.

## PERRISONOTA, Conrad.

Equivalved, elongated; posterior hinge line long, curved, linear, with numerous close, transverse teeth, extending nearly to the end margin; anterior hinge area broad, oblique and somewhat distant from the hinge margin. No fosset under the apex?

P. PROTEXTA, Conrad.—Pl. 9, fig. 24.

*Description.* Subensiform, smooth, convex; anterior side short, extremity situated nearer the hinge than ventral margin.

*Locality.*—Haddonfield, N. J.

## NUCULARIA, Conrad.

N. POPYRIA, Conrad.—Pl. 9, fig. 25.

For description see p. 44 of this work. The figure represents a larger specimen, with some variation of form from that on pl. 1, fig. 7.

*Locality.*—Haddonfield, N. J.

## CYPRIMERIA, Conrad.

C. CRETACEA, Conrad.—Pl. 9, fig. 12.

*Dosinia Haddonfieldensis*, Lea., Proc. Acad. Nat. Sci. 1861, p. 149.

This is the only species yet found at Haddonfield, where it is abundant. Young shells are distinctly sculptured over the whole disk with regular concentric lines, but the adult has them only on the umbo, the other lines being those of growth. This species is distinguished by its obtuse front margin, and the elevated or less oblique hinge margins, compared with *C. depressa*, Conrad. The figure in the Journal of the Academy represents the interior; the disk is here figured together with the hinge.

## CAMPTONECTES, Agassiz.

C. ARGILLENIS, Conrad.—(*Pecten*) Journ Acad. Nat. Sci. 2d series, vol. iv, p. 283, pl. 47, fig. 3.

C. BELLISCUPTUS, Conrad.—Pl. 9, fig. 11.

*Description*.—Ovate, compressed, thin and fragile; divaricating radii distinct; concentric lines extremely thin and minute; interior hinge line crenulated.

*Locality*.—Haddonfield, N. J.

The above description applies to the lower valve. I have not seen the opposite valve.

## SINSYCLONEMA? Meek.

S. SIMPLICIA.—Pl. 9, fig. 20.

The lower valve was represented in the Journ. Acad. vol. iv, pl. 46, fig. 44. The upper valve is here figured. It is remarkable for the prominence of the concentric striæ, and has a few obsolete remote ribs.

*Locality*.—Haddonfield, N. J.

## RADULA, Klein,

R. DENTICUTICOSTA.—Pl. 9, fig. 17 (*Otenoides*) Gabb, Proceed. Acad. Nat. Sci. 1861, p. 327.

The ribs of the shell, when perfect, are sharply and minutely carinated as well as crenulated.

*Locality*.—Haddonfield, N. J.

## TELLINIDÆ.

## METIS, H. and A. Adams.

This genus, which H. and A. Adams place as a subgenus under *Tellinidæ*, is nearly related to *Macoma* by the hinge character, but has a shorter and more ventricose and obtuse form. It is readily recognised by its subequal sides, the broad furrow on the middle of the right valve, and angular fold on the umbonal slope. It occurs in a fossil state, and the following species comprise all that are known to me:

<i>M. biplicata</i> , Conrad ( <i>Tellina</i> ),	} Miocene.
<i>M. medialis</i> , Conrad ( <i>Tellina</i> ),	
<i>M. unda</i> , Conrad ( <i>Tellina</i> ),	
<i>M. tumescens</i> , Dixon, Eocene.	

Mr. Gabb has made a mistake in referring *M. medialis*, Con-

rad, a Miocene fossil, to *M. alta*, Conrad, a recent Californian species. The former is proportionally longer and less ventricose than the latter.

#### MERCENARIA.

*M. PLENA*, Conrad.

*Description*.—Cordate, inequilateral, ventricose, oblique, with close concentric rugose lines; posterior side subcuneiform; lunule ovate; inner margin densely crenulated.

*Locality*.—Eastern Shore, Md. Prof. Cope. Miocene.

I am indebted to Mr. Gabb for this species. It approximates *M. capax*, Conrad, but is shorter, less ventricose, more oblique; the hinge character differs, and the pallial sinus is deeper and more angular.

#### LIROSCAPHA, Conrad.

Beak terminal erect, acute.

*L. SQUAMOSA*, Conrad.—Pl. 9, fig. 23.

*Description*.—Oblong, ventricose, with unequal squamose or spinulose ribs.

*Locality*.—Haddonfield, N. J. Rare.

This is possibly a univalve. It resembles a *Crepidula* externally, but there is no testaceous lamina within. It may be related to *Thylacus*, Conrad, figured in the Journal of the Academy, vol. iv, pl. 46, fig. 22.

#### CANCELLARIA, Lam.

*C. SUBALTA*, Conrad.—Pl. 9, fig. 22.

*Description*.—Elevated; whorls 6, convex, first three smooth; sculpture prominent; rather close longitudinal ribs crossed by smaller lines, about 12 on the last whorl; these lines more distant between the suture and shoulder; labrum angulated above the middle, thickened, strongly toothed on the inner margin; base slightly produced.

*Locality*.—Haddonfield, N. J.

#### EULIMA, Risso.

*E. CRETACEA*, Conrad.—Pl. 9, fig. 15.

*Description*.—Subulate, whorls 11? slightly truncated at base, except the last volution, which is subangular or acutely rounded medially.

*Locality*.—Haddonfield, N. J.

Distinguished by the whorls of the spine suddenly curved inwards above the suture.

## GADUS, Rang.

G. OBNUTUS, Conrad.—Pl. 9, fig. 18.

*Description.*—Slightly curved, gradually tapering above, more suddenly towards the mouth, which is small.

*Locality.*—Haddonfield, N. J.

## CARDITAMERA, Conrad.

C. MACROPLEURA, Conrad.

*Description.*—Trapezoidal, ventricose; large, prominent, flattened on the surface, crossed by prominent lines; ribs 13, gradually increasing in size from the anterior extremity to the umbonal slope; the adjoining post-umbonal rib large, but smaller than the umbonal, and between it and the dorsal line are 3 small or slender ribs, the marginal one thickest; posterior margin obliquely truncated; umbo broad.

*Locality.*—Virginia.

## SAXCICAVA, Lam.

S. INCITA, Conrad.

*Description.*—Trapezoidal, inequilateral, convex, with minute concentric lines; posterior end obliquely truncated, biangulated; beaks distant from the anterior margin.

*Locality.*—E. shore, Maryland.

## CYPRINOPSIS, Conrad.

Equivalve; two anterior cardinal teeth, and one very oblique bifid tooth in the right valve. Pallial line entire.

Type.—*Artemis elliptica*, Smith, Journ. Geolog. Soc. vii, pl. 15, figs. 2, 3.

*Meretrix ovalis*, Gabb, Palæont. Calif. Cretaceous.

This genus is nearly related to *Cyprina*, but the two subequal anterior cardinal teeth of the right valve sufficiently distinguish it. It has also a much narrower posterior tooth, bifid, not trilobed or broadly channelled as in *Cyprina*.

## PALÆOCORBIS, Conrad.

Equivalve; hinge with a pit under the beak of the left valve, and an obtuse anterior thick cardinal tooth; an anterior thick



lateral tooth in each valve, in the left valve excavated; posterior lateral teeth in the left valve 3, parallel with the cardinal line; pallial line entire; anterior side gapping.

*Corbis cordiformis*, D'Orbigny. Cretaceous.

This genus differs essentially from *Corbis*, Cuv., in the arrangement of the hinge teeth, and is not of earlier date than the Necomian Cretaceous. This fossil is common in Egypt as well as France.

Whether *Corbis rotundata*, D'Orbigny, is a member of this genus is doubtful, as the hinge character differs.

### *Triassic.*

#### SOLEMYA.

S. TRIASINA, Conrad.

*Description.*—Oval, extremely thin; end margins subequal and obtuse. Length  $1\frac{3}{4}$  inch. Height 1 inch.

*Locality.*—Near Perkiomen Creek, Penn.

This cast, with portions of the shell remaining, is in a dark, hard slate colored shale. Traces of the extra marginal perios-traca are seen in plications on the stone. Plications are also visible on the posterior side near the extremity on one valve, and other obtuse folds may be the result of pressure on a very thin shell.

My apology for describing this obscure cast is that organic remains, especially shells, are comparatively few in the Triassic rock of Pennsylvania, and I wish to call attention to this bivalve that better specimens may be searched for by collectors and naturalists.

#### DONAX, Linn.

D. FORDII, Conrad.—Pl. 9, fig. 27.

*Description.*—Triangular, inequilateral, ventricose; extremities acutely rounded; radiated by minute, close impressed lines, near the posterior ventral margin a few concentric lines are crenulated by the junction with the radiating lines.

*Locality.*—Haddonfield, N. J. Mr. J. W. Ford.

#### ERYCINELLA, Conrad.

*Woodia lævigata*, Speyer, is a species of this genus.

*Reference.*—Dunker's Palæont. pl. 30, fig. 8.

## SOLEMYA, Lam.

## S. VENTRICOSA, Conrad.

The external form and the rays indicate this shell to be a true *Solemya*, where it must remain until the hinge has been seen. Mr. Gabb refers it to *Siliqua patula*, Dixon, but it differs greatly in form, being highest posteriorly, and especially varies by the rayed posterior lines, and it is besides an extinct species.